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BEFORE THE

Federal Communications Commission

WASHINGTON, D.C.

In the Matter of	
Implementation of Section 309(j) of the Communications Act Competitive Bidding	PP Docket No. 93-253

COMMENTS
OF THE
CELLULAR TELECOMMUNICATIONS INDUSTRY ASSOCIATION

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SUMMARY

CTIA strongly supports the four guiding principles on which the Commission's spectrum auction proposals are based, namely (1) administrative simplicity; (2) cost minimization; (3) assignment of licenses to the eligible parties that value them most; and (4) efficient aggregation of licenses.

To implement these guiding principles most effectively, CTIA recommends a PCS spectrum auction design which:

- Uses "English" style oral ascending-bid auctions to award individual geographic areas;
- Uses sealed "combinatorial" auctions to license larger geographic areas;
- Conducts combinatorial auctions for the larger geographic areas within a given spectrum block and posts the winning combinatorial bid before conducting individual English auctions for the constituent licenses in that block;
- Auctions all geographic areas in a given spectrum block before proceeding to auction the next spectrum block;
- Offers geographic regions within a given spectrum block in descending order of population;
- Allows combinatorial bidding only to combine geography, not spectrum; and
- Relies on existing antitrust laws to deter collusive behavior.

CTIA supports the use of auctions to license intermediate microwave links and cellular unserved area applications filed prior to July 26, 1993. With respect to intermediate links, however, CTIA recommends two ways of eliminating any incentive

for speculators whose sole interest would be to extort settlements in the auctioning of these links. Specifically, the Commission should:

- allow the continued use of Special Temporary Authorizations ("STAs") and Temporary-Fixed Authorizations ("TFAs") for the pre-authorization construction and operation of microwave links; and
- adopt an expedited schedule for auctioning these links.

In addition, the Commission should replace the rigorous pre-auction application procedures proposed in the Notice (such as the "letter-perfect" review standard) with streamlined procedures to maximize bidder participation in spectrum auctions.

Finally, Commission retention of the deposit of an auction winner who is ultimately unqualified, ineligible, or unable to pay its bid should be adopted as the best method for deterring frivolous and ill-considered applications.

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The Cellular Telecommunications Industry Association ("CTIA")[1] hereby submits its comments in the above-captioned proceeding[2] to implement provisions of the Omnibus Reconciliation Act of 1993[3] which authorize the FCC to award licenses to use the electromagnetic spectrum through a competitive bidding process. Given the importance of the pending rulemaking to the future of wireless communications, CTIA and its members are vitally interested parties to this proceeding.

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[1] CTIA is the trade association of the cellular industry. Its members include over 90% of the licensees providing cellular service to the United States and Canada. CTIA's membership also includes cellular equipment manufacturers, support service providers, and others with an interest in the cellular industry.

[2] Implementation of Section 309(j) of the Communications Act, Competitive Bidding, Notice of Proposed Rulemaking, PP Docket No. 93-253, FCC 93-455 (released October 12, 1993) ("Notice").

[3] Communications Licensing and Spectrum Allocation Improvement Act, Pub. L. No. 103-66, § 6002, 107 Stat. 379, 387-397 (1993) ("Spectrum Auction Act")

INTRODUCTION

CTIA strongly supports the Commission's decision to implement a system of spectrum auctions which: (1) is simple and easy to administer;[4] (2) minimizes costs to applicants and the Commission;[5] (3) awards licenses to the eligible parties that value them most;[6] and (4) facilitates the efficient aggregation of licenses where appropriate.[7] In addition, CTIA believes that the various auction mechanisms proposed in the Notice, as modified by the suggestions discussed in these comments, will serve as effective vehicles for implementing these four principles.

For PCS specifically, CTIA endorses a spectrum auction design which: (1) uses "English" style oral ascending-bid auctions to award individual licenses; and (2) uses sealed "combinatorial" bids to license larger geographic areas. CTIA submits an economic analysis from Dr. Marc Isaac, a recognized scholar in auction design, which examines in further detail English and combinatorial auctions in the context of the Commission's proposed uses.[8] Dr. Isaac concludes that these

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[4] Notice at ¶¶ 18, 109.

[5] Id.

[6] Id. at ¶ 34.

[7] Id.

[8] Dr. R. Mark Isaac, "Discussion of Proposed Spectrum Auction Processes," November 10, 1993 ("Isaac").

mechanisms will best achieve the Commission's overriding objectives.

With respect to the order in which these two principal auction mechanisms should be conducted when utilized together, CTIA recommends that the "best and final" aspect of the proposal be abandoned and that the basic auction sequence proposed in the Notice be reversed: The Commission should conduct the sealed-bid combinatorial auction for the larger geographic area within a spectrum block and post the winning combinatorial bid before conducting individual English auctions for the constituent licenses in the block. As CTIA demonstrates, prior posting of the winning combinatory bid will:

- foster greater participation in spectrum auctions, especially by small and medium-sized applicants, by serving as an "implicit reservation bid;"
- expedite the auction process in many instances, for example by indicating to bidders early on that the posted combinatory bid will prevail, thereby shortening the auction life cycle substantially;
- improve the likelihood that licenses will be assigned to the highest bidder and that bidders will reveal their maximum willingness to pay;
- avoid the "free rider" problem created by the "best and final" mechanism; and
- promote more aggressive bidding for individual licenses, thereby increasing government revenues.

In short, under CTIA's revised approach, greater government revenues and increased auction efficiency coincide.

Consistent with the Commission's simplicity principle, bidding should proceed sequentially, not simultaneously. In the PCS context, the Commission should begin with a combinatory bid

for the nationwide group in the "A" spectrum block.[9] After posting of the winning combinatory bid, all MTAs within this block would be offered using English auctions. The licenses would be awarded to the higher of the two sets of bids in the "A" block before proceeding to the "B" spectrum block, etc. Within each spectrum block, geographic regions should be licensed in descending order of population.

Also for simplicity and efficient aggregation purposes, combinatorial bidding should be used to combine geography, not spectrum. Thus, for example, combinatories should be used in PCS auctions only to offer: (1) nationwide licenses for MTA blocks "A" and "B" and (2) MTA licenses for BTA blocks "C" through "G." Combinations across PCS spectrum blocks will still be possible through separate bidding in separate auctions and through private market transactions, subject of course, to regulatory and antitrust scrutiny. Combinations of both geography and spectrum should be avoided, due to the multiple levels of complexity such "3-D" combinatories would introduce.

Finally, CTIA urges the Commission to discard the complex pre-auction application procedures outlined in the Notice. Not only are these procedures at odds with the Commission's

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[9] Throughout these comments, CTIA's discussion of combinatorial bidding as specifically applied to BTAs and MTAs and their associated spectrum blocks is merely expository and assumes that no change in the PCS licensing scheme will occur. However, CTIA's spectrum auction proposals set forth in these comments apply with equal force (with appropriate adjustments) to whatever allocation scheme and service areas the Commission ultimately adopts. See n. 54, infra.

simplicity principle, but they are also antiquated in this setting. These procedures were initially developed in the context of comparative hearings and lotteries in which rigorous pre-screening of the applicant pool was arguably necessary. However, the introduction of competitive bidding fundamentally alters the dynamics of the spectrum licensing process and renders obsolete the need for many of these procedures, such as the letter-perfect standard and the "minor vs. major modification" inquiry. These cumbersome procedures are not necessary to deter frivolous or ill-considered filings, since the potential forfeiture of a winning bidder's substantial deposit is more than sufficient in this regard. The Commission's goal here should be to permit those that most value the spectrum to obtain its use.

While CTIA's comments address some issues bearing upon the Commission's general auction rules, our principal focus is on the application of these rules in the PCS context given the limited statutory timeframe for PCS implementation and the significant role PCS will play in our increasingly mobile society.

I. AUCTION DESIGN

A. The Commission's Principle of Awarding Licenses to the Eligible Parties That Value Them Most Will Best Achieve Congressional Objectives

The Commission's guiding principle of awarding licenses to the eligible parties that value them most will effectively implement Congress' objectives, notably the rapid development of new technologies, products, and services; the recovery for the public of the value of the radio spectrum; and the efficient and

intensive use of this spectrum.[10] The Commission correctly observes that absent market failures, "the parties that value licenses the most should generally best serve the public and make rapid and efficient use of the spectrum."[11] This principle will also ensure that the delay and costs associated with aftermarket transactions are minimized. Finally, since the Commission has proposed appropriate measures to ensure that small businesses,[12] rural telcos, and businesses owned by women and minorities are "given the opportunity to participate in the provision of spectrum-based services,"[13] any concern that the Commission's "highest valuation = highest public benefit" maxim will cater to "deep pockets" to the exclusion of these designated entities is unwarranted.

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[10] 47 U.S.C. §§ 309(j)(3)(A,C,D).

[11] Notice at ¶ 34.

[12] In the case of small businesses, CTIA supports the use of SBA's "small business" definition for determining whether an entity is eligible for special treatment in the PCS auction context. See SBAC Report at 20-21; Notice at ¶ 77, n. 51. Under the "size standard" prong of this definition, a PCS applicant would qualify as a small business by showing that together with affiliates, and excluding affiliates, it has 1,500 or fewer employees. See 13 C.F.R. § 802(a)(2)(ii); 13 C.F.R. § 121.601 (Under "Major Group 48," SIC code 4812, radiotelephone communications entities have a size standard of 1,500).

[13] See Notice at ¶¶ 72-81. See also 47 U.S.C. § 309(j)(4)(D).

B. CTIA Strongly Supports the Commission's Proposed Use of Oral Auctions and Limited Combinatorial Bidding as the Primary Vehicles for Implementing its Guiding Principles

1. English Style Oral Ascending-Bid Auctions Should Be Adopted As the Commission's Principal Spectrum Auction Vehicle

CTIA supports the Commission's tentative conclusion that oral ascending-bid auctions should be the primary auction method.[14] As the Commission correctly notes, oral bidding is most likely to: (1) award licenses to parties that value them most; (2) facilitate the efficient aggregation of licenses since a bidder who is willing to outbid all others can be assured of acquiring a group of licenses; (3) reduce private costs because it does not require estimation of the value other bidders place on the item; and (4) be perceived as fair because the process is open and accessible to all willing and qualified bidders.[15]

In addition, oral auctions are simple to administer. Commission entanglement in issues such as when bids should be submitted, what the ideal sequence for opening these bids should be, whether to permit bidder-specified limitations on winnings or expenditures, etc. is unnecessary due to the uncomplicated and straightforward bidding mechanism of the oral auction. Thus,

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[14] Notice at ¶ 46.

[15] Id. at ¶¶ 37, 46. See Kwerel and Felker, "Using Auctions to Select FCC Licensees," OPP Working Paper Series 16, at 23 (May 1985) ("OPP Spectrum Auction Study").

oral bidding most effectively implements each of the Commission's four guiding principles.[16]

It is unnecessary for the Commission to adopt rules specifically prohibiting collusive conduct.[17] Under the auction design advocated by CTIA, the potential for bidder collusion that is often cited as a disadvantage of oral auctions is minimized. The posting of the combinatory bid prior to initiation of the individual auctions (as described in section I.C.1., infra), coupled with the fact that a higher combinatory bid will result in the awarding of all licenses as a group, creates a substantial disincentive for bidders to engage in collusive behavior in the first instance. The adoption of anticollusion rules in this context will do little more than complicate the auction process unnecessarily and provide losing bidders with an additional excuse to attack winning bidders.

In addition, existing penalties available under the Sherman Act serve as adequate restraints or collusive behavior.[18] Only the Department of Justice can enforce the criminal code, and the

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[16] See p. 2, supra. See also Isaac at 2-5 (discussing the numerous benefits of English auctions).

[17] See Notice at ¶¶ 46, 93-94.

[18] Collusive bidding practices that interfere with free competitive bidding will be held to constitute price fixing in violation of Section 1 of the Sherman Act and Section 5 of the Federal Trade Commission Act. See, e.g., United States v. Finnis T. Ernest, Inc., 509 F.2d 1256, 1261 (7th Cir.), cert. denied, 423 U.S. 890 (1975) (§ 1 of the Sherman Act). The Department of Justice may seek either criminal or civil penalties for such conduct. See also Von Kalinowski, Antitrust Laws and Trade Regulation, § 61.02[1] (1992).

Commission should not rush to apply administrative sanctions to patently criminal conduct. Seen in this light, Commission adoption of specific anticollusion rules could interfere with and undermine successful prosecutions under these existing laws by potentially creating a conflict of laws between a regulatory remedy and statutory remedies.

Finally, the Commission should not enmesh itself in such a resource-intensive line-drawing exercise to distinguish legitimate collaboration in the form of efficiency-enhancing bidding consortia and unlawful cartelization, given its limited resources, when the end result will be the substantial delay in implementation of significant wireless services in direct contravention of express congressional directives.

2. Combinatorial Bidding[19]

a. Combinatorial Bidding Will Most Effectively Implement the Commission's Efficient Aggregation, Cost Minimization, and Highest Valuation Principles

Combinatorial bidding will complement the numerous benefits of oral auctions. It is common to think of each bidder at an auction as having a well-defined "value" for the item, such as

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[19] The Commission is well within its authority to adopt a combinatorial auction approach in light of the Act's directive to the Commission to "seek to design and test multiple alternative [competitive bidding] methodologies under appropriate circumstances." 47 U.S.C. § 309(j)(3). This is especially true in the PCS context where the level of bidder flexibility introduced by the combinatory approach will be well-suited to the inherently diverse nature of PCS. See H.R. Rep. No. 103-111, 103d Cong., 1st Sess. 254 (1993) ("House Report") ("The Committee expects the Commission to match auction methodologies with the characteristics of the service").

the maximum amount an art collector would be willing to pay for a painting. However, this is not the only possible description of bidder values. As Dr. Isaac points out:

> Another approach recognizes that how much someone values one object may depend upon what other objects she does or does not possess. Thus, an airline's valuation of an airport "slot" in Washington may depend upon whether or not the airline has a similar slot in Chicago. An art collector may value a matched pair of famous paintings more than the sum of how she would value either of them separately.[20]

Although combinatorial values exist outside of auctions, standard auctions simply ignore these values. If a bidder purchases two items, whether in the same multiple-unit auction or in two separate auctions, that bidder is unable to convey to the system his combinatorial values. Rather, efforts to maximize combinatorial values take place in aftermarkets through informal decentralized bundling and unbundling of commodities.[21] The Commission recognizes this shortcoming of standard auctions:

> Bidding on individual licenses, even sequentially, does not allow bidders to fully express the interdependence of license values and does not ensure that groups of licenses are assigned to their highest valued use.[22]

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[20] Isaac at 6 (citing Grether, D.M., R.M. Isaac, and C.R. Plott, The Allocation of Scarce Resources: Experimental Economics and the Problem of Allocating Airport Slots (Westview Press 1989)).

[21] See Isaac at 7.

[22] Notice at ¶ 57 (noting, for example, that with sequential bidding a firm's bid in the early rounds would not be able to reflect whether the firm was able to acquire contiguous licenses in later rounds) (citing John Riley and William Samuelson, "Optimal Auctions," American Economic Review 389 (June 1981)).

By contrast, combinatorial bidding allows the auction itself to dictate the optimal way of bundling the auctioned items. As Dr. Isaac describes it:

> Combinatorial bidding allows bidders to express their combinatorial values; bids can now more accurately reflect the valuation of different combinations of the goods at the auction.... The market becomes the mechanism for determining the combination of goods.[23]

By allowing bidders to convey, directly through the auction process, the interdependence of license values, combinatories reduce aftermarket transaction costs,[24] facilitate the efficient aggregation of licenses by "allow[ing] bidding for groups of licenses that are likely to have more value as a package than individually,"[25] and ensure that groups of licenses are assigned

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[23] Isaac at 8 (emphasis in original).

[24] As Rep. Dingell has aptly described it, the combinatorial approach "replicates for the Government the market conditions that otherwise would have led to transactions in the aftermarket." Letter of the Honorable John D. Dingell to the Honorable James H. Quello, Chairman, Federal Communications Commission (September 21, 1993) at 1 ("Dingell Letter"). See also Notice at ¶ 35.

While combinatory bidding allows the auction to drive the optimal bundling of items, one can still expect some post-auction re-combinations as licensees learn more about PCS. Neither the government nor commercial bidders can divine what PCS will ultimately become; rather, auction winners will acquire information as they go along. Given the uncertainties inherent in PCS, secondary market transactions are both inevitable and necessary. See CTIA Comments filed in Gen. Docket No. 90-314, November 9, 1992, at 6-7; 23-28. Moreover, to facilitate the efficient rationalization of PCS licenses in these aftermarket transfers, the Commission should make use of tax certificates to allow deferral of tax on FCC sanctioned dispositions. See Internal Revenue Code § 1071; Treasury Reg. § 1.1071-1(a)(2)(ii).

[25] Notice at ¶ 57.

to their highest valued use.[26] As an added bonus, combinatories will maximize revenues to the Treasury. And while Section 309(j)(7)(B) prohibits the Commission from prescribing regulations based solely or predominantly on the expectation of these revenues, "it would be serendipitous indeed if good telecommunications policy enhanced our efforts to reduce the deficit."[27]

b. The Commission Should Use Combinatorial Bidding to License PCS

CTIA supports the Commission's proposal to use combinatorial bidding for awarding the PCS licenses. Assuming the current licensing scheme remains unchanged,[28] this would permit either a nationwide grouping or individual MTA awards of PCS licenses for the two 30 MHz spectrum blocks (blocks "A" and "B"). If the sum of the winning individual MTA bids exceeds the nationwide sealed combinatory bid, the MTA licenses would be awarded separately. If the latter exceeds the former, however, the entire set of MTA licenses would be awarded to the winner of the combinatory bid.[29]

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[26] Of course, a combinatory approach is also consistent with Section 309(j)(3)'s objectives of speedy service deployment, recovery for the public of a portion of the value of the public spectrum resource, and efficient and intense use of the spectrum. See also 47 U.S.C. § 309(j)(4)(C).

[27] Dingell Letter at 3. See also Notice at n. 40.

[28] See n. 9, supra.

[29] See Notice at ¶ 120.

A combinatorial bid should also be used to facilitate grouping of broadband PCS licenses with BTA service areas.[30] If the combinatory bid for all licenses within a particular spectrum block (e.g., block "F") across an MTA is greater than the sum of the individual winning BTA bids, all the BTA licenses within that spectrum block across the MTA would be awarded as a group.[31] Otherwise, they would be awarded separately to the individual BTA winners.

c. Combinatorial Bidding Should be Done Sequentially Rather Than Allowing Parties to Bid Simultaneously on Some or All PCS Licenses

Like oral auctions, combinatorial bidding should be held sequentially rather than allowing parties to bid simultaneously on some or all PCS licenses. As the Notice correctly points out, sequential bidding is "likely to be better than sealed simultaneous independent bidding in facilitating the efficient aggregation of licenses" because "[u]nder sequential bidding the amount bid in later rounds can reflect what licenses have been acquired in earlier rounds."[32]

CTIA commends the Commission's decision to limit the use of the combinatorial mechanism in the PCS context to a single combinatory bid for component MTA and BTA blocks. While allowing

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[30] See id. at ¶ 123.

[31] See Section I.C.2., infra.

[32] See Notice at ¶ 51. Sequential bidding also avoids the problem of bidders exceeding the amount they can pay or winning more licenses than they want, since bidders will monitor their expenditures and winnings as they go along. See id. at ¶¶ 63-65.

combinatorial bids for whatever combinations an applicant desired might provide greater flexibility, it would render the licensing process so complex as to be contrary to the congressional directive for speedy PCS licensing/deployment and fundamentally at odds with the Commission's simplicity principle. As Dr. Isaac describes it:

> A complete combinatorial auction would allow bidders to submit bids not just on 1,2,3, and N, but also upon the blocks of 1+2, 2+3, and 1+3.... The FCC's proposal has, on the other hand, a significant advantage: it is simple and easy to understand. Combinatorial auctions are not well known. The fact that the example used here uses only three blocks illustrates the fact that the mathematics of the complete combinatorial bidding gets very complicated very quickly. Complexity in this context raises a number of concerns, including difficult and controversial implementation, difficulty in formulating bids, discouraging of potential (especially smaller) bidders, and potentially less efficient outcomes. The FCC's proposal is a simple but appropriate and important first step to introducing and evaluating combinatorial auctions in this process.[33]

d. Combinatorial Bidding Should Be Used to Combine Geography, Not Spectrum

The Commission seeks comment on whether combinatorial bidding should be used to aggregate spectrum (i.e., 10 MHz broadband PCS licenses into 20 MHz or 30 MHz blocks) and whether this technique should be used to permit aggregation across both geographic areas and spectrum blocks.[34] CTIA urges the Commission to use combinatorial bidding only to aggregate geography, not spectrum.

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[33] Isaac at 12.

[34] Notice at ¶ 124.

Since aggregation across geographic areas will likely be more important in the PCS context than aggregation across spectrum,[35] the auction process should facilitate the efficient aggregation of this primary component.

Moreover, allowing "3-D" combinatories across both spectrum and geographic areas would introduce a level of complexity into the PCS licensing process that the Commission is endeavoring to avoid -- indeed, must avoid in order to meet the tight statutory timeframe.[36] As the OPP Spectrum Auction Study pointed out, such simultaneous bidding for non-identical items

> would require the FCC to develop a complex rule for determining who wins which items and at what price. In practice, such a system would surely be too complex to administer.[37]

Accordingly, combinatories should be used to aggregate geography, not spectrum. PCS spectrum can be aggregated most efficiently and expeditiously through separate bidding in separate auctions and through private market transactions, subject of course, to regulatory and antitrust scrutiny.

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While the Commission's use of oral and limited combinatorial auctions will effectively implement the Commission's guiding principles, CTIA believes that the rejection of the "best and

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[35] See discussion in Section I.C.2., infra. See also Notice at ¶ 52.

[36] See, e.g., Notice at ¶ 109 ("Section 309(j)'s purposes would be furthered by an administratively simple auction process").

[37] OPP Spectrum Auction Study at 24.

final" mechanism and a modification to the Commission's recommended sequence for conducting the English and combinatorial auctions in the PCS context will more effectively achieve Commission and congressional goals. This modified approach will also avoid the problem of a bidder refraining from raising her bid in the hopes that others will raise their bids enough that the licenses would be issued individually at no additional expense to herself ("free rider problem"). CTIA discusses its proposed modifications to the Commission's proposals, as well as issues relating to the order in which PCS licenses should be offered for bidding, in the following section.

C. Auction Sequence and Bidding Order

1. The Commission Should Conduct the Sealed Combinatorial Auction for the Larger Geographic Area Within a Spectrum Block and Post the Winning Combinatory Bid Before Conducting English Auctions for the Constituent Geographic Areas in the Block

The Commission proposes to accept sealed combinatory bids prior to conducting oral auctions for the constituent licenses, but tentatively concludes that these combinatory bids should not be opened until after completion of oral bidding for individual licenses.[38] CTIA respectfully suggests that a more efficient auction sequence would work as follows:

1. Accept sealed combinatory bids for the combinatory license(s) within the spectrum block.

2. Open the combinatory bids and post the winning bid publicly.

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[38] See Notice at ¶¶ 58-59, 120.

3. Conduct the sequential English auctions for the individual licenses within the spectrum block.

4. A "best and final" round would not be used.

As the discussion below reveals, the initial posting of the combinatory bid will not only promote greater participation by small and medium-sized applicants and more aggressive bidding for individual licenses than would the Commission's auction sequence, but it will also improve the likelihood of assigning licenses to their highest valued use and of inducing bidders to reveal their maximum valuations without introducing the "free rider" problem associated with the "best and final" mechanism.

a. CTIA's Modified Auction Sequence Will Foster Greater Participation, Especially By Small and Medium-Sized Applicants, and Will Promote More Aggressive Bidding for Individual Licenses by Establishing an "Implicit Reservation Bid"

The Commission bases its proposal to open the sealed combinatory bid after the completion of the individual auctions on its belief that "[i]f it became apparent that a bid for a group of licenses was likely to exceed the sum of the individual bids, bidding would virtually cease for the remaining individual licenses."[39] CTIA respectfully submits that the Commission's analysis is incomplete. Indeed, it is equally likely that the prior posting of a combinatory bid which is perceived for some reason as "low" would result in greater participation and more aggressive bidding for the constituent blocks. Even if the combinatory bid is "high," the possibility that bidding might

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[39] Id. at ¶ 59.

cease for the remaining individual licenses could actually be in the public interest, i.e., by speeding the licensing process itself.[40] Conversely, under the Commission's proposed auction sequence, the same result might be achieved, but only after the substantial expense and delay produced by the potentially numerous, but in retrospect wholly unnecessary, individual auctions.

Regardless of whether the preannounced combinatory bid is deemed "too high" or "too low," CTIA's revised auction sequence will increase participation, including participation by small and medium-sized applicants, by establishing an "implicit reservation bid." Under the Commission's approach, many qualified bidders are likely to refrain from participating in individual auctions due to their uncertainty as to the objective worth of the spectrum block up for auction and their inability to expend the necessary resources for research and appraisal. Conversely, the posting of the combinatory bid at the outset provides these smaller entities (as well as others) with valuable insight into the underlying value of the component blocks. Potential applicants will be able to take the winning combinatory bid and, using simple division, derive various approximate valuations of the spectrum, for example on a "per pop," "per pop per MHz," or "per constituent block" basis.

Of course, the preannounced bid is not a reservation price in the usual sense because it is a bid going across all the

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[40] See Isaac at 14.

English auctions.[41] Nevertheless, as an informational tool, it will prove invaluable to potential bidders for the individual blocks, especially small and medium-sized bidders. Based on this information, many bidders who would otherwise have refrained from participating at the individual auction level due to their uncertainty as to the spectrum's worth and their unwillingness to undertake the considerable expense to estimate its value (as well as their reluctance to incur the transaction costs to participate in such an uncertain endeavor), may very well bid for individual blocks. Seen in this light, CTIA's revised auction sequence implements Congress' express goal of encouraging the participation of and dissemination of licenses to a wide variety of applicants, particularly the entities designated in the statute.[42]

In addition, the initial posting of the winning combinatory bid will cause auction participants to bid more aggressively, thereby increasing the government's expected revenues. As two of the principal experts on auction theory have described it:

> Sometimes the seller has independent information correlated with the item's value to any of the bidders. (For example, the government can do its own geological surveys before offering mineral rights for sale; the seller of a painting can obtain an expert's appraisal.) Should the seller conceal this information, or should he reveal it? The seller can increase his expected revenue by having a policy of publicizing any information he has about the item's true value. This is because the new information tends to increase the value estimates of those bidders who perceive the

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41 See id.

42 See 47 U.S.C. §§ 309(j)(3)(B), (j)(4)(C)(ii).

item's true value to be relatively low, causing them to bid more aggressively.[43]

Finally, the implicit reservation price established by the prior posting of the combinatory bid will achieve these beneficial results while avoiding the administrative burdens which would otherwise be introduced were the Commission to develop and implement an actual reservation price for spectrum auctions.[44]

b. CTIA's Modified Auction Sequence Will Improve the Efficiency of the Auction Process While Avoiding the "Free Rider" Problem Introduced by the "Best and Final" Mechanism

Typically, in standard oral and sealed bid auctions, the winning bid is less than the maximum price the winner was willing to pay. In oral auctions, while licenses will be properly assigned to the party who values them most, the price the winning party pays is usually not the maximum amount he is willing to pay, but rather the approximate value placed on the item by the bidder with the second highest willingness to pay.[45] Similarly, in a standard sealed bid auction, parties shade their bids below the maximum they are willing to pay in order to avoid paying more than necessary to win the auction. Moreover, because bidders in standard sealed bid auctions do not know precisely how much other parties will bid, there is the additional possibility that the

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[43] McAfee and McMillan, "Auctions and Bidding," Journal of Economic Literature, 25:699, 72 (June 1987).

[44] See Notice at ¶¶ 66-67.

[45] Isaac at 3-5; OPP Spectrum Auction Study at 23.